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Mineral Industry Surveys

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CHROMIUM IN MARCH 2005

On the basis of gross weight, consumption of chromium ferroalloys and metal in March 2005 increased 5% compared with consumption in February 2005; first quarter 2005 consumption decreased 4% compared with that of fourth quarter 2004; and first quarter 2005 consumption decreased slightly compared with that of first quarter 2004, according to the U.S. Geological Survey.

Included in this Mineral Industry Surveys are U.S. salient chromium statistics, U.S. Government stockpile inventory of chromium materials in March 2005, consumption by end use and consumer stocks of chromium ferroalloys and metal at the end of March 2005, and U.S. foreign trade data for selected chromium-containing materials in February 2005.

Update

The Defense National Stockpile Center announced the sale of 9,072 metric tons of high-carbon ferrochromium in April valued at $8.6 million or $0.43 per pound, gross weight (Defense National Stockpile Center, 2005).

The International Chromium Development Association (ICDA) has prepared a brief report entitled Lung Cancer and Electric Arc Welding, which is oriented to the general public. Copies are available upon request while they last; please contact the author of this Mineral Industry Surveys publication. The ICA report states that welders have a 30% to 40% excess risk of lung cancer. Welders are exposed to chromium, nickel, and iron, all constituents of stainless steel. Compounds of some of these metals have been identified as carcinogenetic. Welders also have been exposed to asbestos dust and tobacco smoke, which are known causes of lung cancer. G.H. McMillan (2005§[1]) recommended that worker exposure to known carcinogens be reduced, that exposure to welding fumes be reduced, and that welders' general life-style factors be improved.

Reference Cited

Defense National Stockpile Center, 2005, Stockpile announces ferrochromium sales for April 2005: Defense National Stockpile Center, news release DNSC-05-2598, April 5, 1 p.

Internet Reference Cited

McMillan, G.H., 2005, Lung cancer and electric arc welding. The chromium file, no. 12, International Chromium Development Association., accessed April 22, 2005 at URL:http://www.chromum-asoc.com/publications/crfile12mar05.htm.)

[1]A reference that includes a section mark (§) is found in the Internet Reference Cited section.

TABLE 1
U.S. SALIENT CHROMIUM STATISTICS[1]

(Metric tons, gross weight)

	2004		2005			
	Fourth quarter	January-December[2]	January	February	March	January-March
Production:						
Stainless steel production[3]	618,000	2,000,000	217,000	183,000	NA	400,000 [4]
Components of U.S. supply:						
Stainless steel scrap receipts	189,000	787,000	62,600	63,400	60,300	186,000
Stainless steel scrap consumption	284,000	1,120,000	91,700	89,200	87,300	268,000
Imports for consumption:						
Chromite ore	60,600	153,000	9,660	25,300	NA	35,000 [4]
Ferrochromium:						
More than 4% carbon	132,000	398,000	56,800	39,900	NA	96,700 [4]
More than 3% carbon but not more than 4% carbon	18	48	--	18	NA	18 [4]
More than 0.5%, but not more than 3% carbon	739	5,720	1,710	576	NA	2,280 [4]
Not more than 0.5% carbon	8,240	31,400	3,100	4,650	NA	7,750 [4]
Ferrochromium silicon	9,840	30,600	5,690	4,020	NA	9,710 [4]
Total ferroalloy imports	150,000	466,000	67,300	49,200	NA	116,000 [4]
Chromium metal[5]	2,320	9,610	1,200	998	NA	2,200 [4]
Stainless steel	244,000	811,000	71,000	74,100	NA	145,000 [4]
Stainless steel scrap	37,500	146,000	10,400	11,400	NA	21,800 [4]
Distribution of U.S. supply:						
Consumption, industry, chromium ferroalloys and metal	109,000	432,000	38,100 [r]	32,200	33,800	104,000
Exports:						
Chromite ore	2,100	43,100	2,550	1,540	NA	4,090 [4]
Chromium ferroalloys:						
High-carbon ferrochromium	1,370	6,580	334	439	NA	773 [4]
Low-carbon ferrochromium	430	1,410	73	1,700	NA	1,780 [4]
Ferrochromium silicon	25	1,150	20	8	NA	28 [4]
Total ferroalloy exports	1,820	9,140	427	2,150	NA	2,580 [4]
Chromium metal	155	931	103	35	NA	139 [4]
Stainless steel	79,400	323,000	26,100	28,600	NA	54,700 [4]
Stainless steel scrap	122,000	478,000	31,900	52,800	NA	84,700 [4]
Stocks at end of period:						
Consumer, industry, chromium ferroalloys and metal	XX	XX	11,300	11,400 [r]	12,400	XX
Government stockpile:						
Chromium ferroalloys	XX	XX	576,000	566,000	555,000	XX
Chromium metal	XX	XX	6,190	6,190	6,190	XX

[r]Revised. NA Not available. XX Not applicable. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]May include revised data.

[3]Data on stainless steel production reported by American Iron and Steel Institute; monthly, quarterly, and year-to-date production of stainless and heat-resisting raw steel.

[4]Includes January through February data; March data not available.

[5]Includes waste and scrap and other.

TABLE 2
U.S. REPORTED CONSUMPTION AND STOCKS
OF CHROMIUM PRODUCTS IN 2005[1, 2]

(Metric tons, gross weight unless otherwise noted)

	February	March	January-March[3]
Consumption by end use:			
Alloy uses:			
Iron alloys:			
Steel:			
Carbon steel	430	355	1,270
High-strength low-alloy steel	630	645	1,890
Stainless and heat-resisting steel	27,300 r	29,000	89,400
Full alloy steel	1,510	1,540	4,780
Electrical steel	W	W	W
Tool steel	450 r	429	1,310
Unspecified steel	W	W	W
Cast irons	W	W	W
Superalloys	839 r	823	2,430
Other alloys[4]	75 r	69	197
Total	32,200	33,800	104,000
Total, chromium content	18,900	19,800	60,800
Consumption by material:			
Low-carbon ferrochromium	2,000 r	1,850	5,980
High-carbon ferrochromium	27,000 r	28,600	88,100
Ferrochromium silicon	2,650	2,770	8,350
Chromium metal	398 r	407	1,210
Chromite ore	W	W	W
Chromium-aluminum alloy	32 r	31	89
Other chromium materials	W	W	W
Total	32,200	33,800	104,000
Total, chromium content	18,900	19,800	60,800
Consumer stocks:			
Low-carbon ferrochromium	1,990 r	2,070	XX
High-carbon ferrochromium	8,100	8,820	XX
Ferrochromium silicon	1,120	1,260	XX
Chromium metal	157 r	158	XX
Chromite ore	W	W	XX
Chromium-aluminum alloy	31 r	25	XX
Other chromium materials	W	W	XX
Total	11,400 r	12,400	XX
Total, chromium content	6,800 r	7,310	XX

rRevised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes estimates.

[3]May include revised data.

[4]Includes welding and alloy hard-facing rods and materials; wear- and corrosion-resistant alloys; and aluminum, copper, magnetic, nickel, and other alloys.

TABLE 3
U.S. GOVERNMENT STOCKPILE INVENTORY OF CHROMIUM MATERIALS[1, 2]

(Metric tons)

Period	Chromite ore Refractory	Chromium ferroalloys		Chromium metal
		High-carbon ferro-chromium	Low-carbon ferro-chromium	
2004:				
March	82,100	453,000	212,000	6,660
April	--	436,000	209,000	6,660
May	--	430,000	208,000	6,660
June	--	425,000	208,000	6,660
July	--	414,000	208,000	6,670
August	--	412,000	206,000	6,670
September	--	408,000	192,000	6,670
October	--	404,000	192,000	6,670
November	--	398,000	191,000	6,670
December	--	398,000	191,000	6,670
2005:				
January	--	386,000	190,000	6,190
February	--	378,000	188,000	6,190
March	--	368,000	187,000	6,190

-- Zero.

[1]Data are rounded to no more than three significant digits.

[2]These Government stocks are reported by the Defense National Stockpile Center in Inventory of Stockpile Materials R-1, which reports uncommitted inventory. Uncommitted inventory is that inventory for which there is no sales contract. Committed inventory is that inventory for which there is a sales contract, however, the material has not yet been shipped. For chromium materials, the R-1 report includes chromium materials that (1) meet specifications and are held in excess of goal and (2) do not meet specifications and are held in excess of goal. The R-1 report excludes chromium materials that are committed and awaiting shipment.

Source: Defense National Stockpile Center.

TABLE 4

U.S. EXPORTS OF CHROMITE ORE, CHROMIUM FERROALLOYS, AND METAL[1]

Period	Chromite ore		Chromium ferroalloys[2]			Chromium metal[3]	
	Gross weight (metric tons)	Value (thousands)	Gross weight (metric tons)	Chromium content (metric tons)	Value (thousands)	Gross weight (metric tons)	Value (thousands)
2004:							
February	2,510	$548	685	409	$1,040	76	$1,660
March	938	290	2,440	1,400	2,940	54	1,710
April	1,340	359	623	348	735	69	2,230
May	3,920	480	370	198	443	177	1,850
June	11,000	1,570	671	362	931	79	1,400
July	8,180	2,130	713	398	1,000	100	1,570
August	10,200	2,680	533	322	685	93	1,510
September	2,750	1,590	706	401	876	53	1,290
October	823	270	565	347	799	58	1,190
November	507	197	616	398	843	46	1,020
December	771	231	639	388	897	51	657
January-December	43,100	10,400	9,140	5,320	12,000	931	17,600
2005:							
January	2,550	618	427	257	610	103	1,070
February	1,540	404	2,150	1,330	2,910	35	796
January-February	4,090	1,020	2,580	1,580	3,520	139	1,870

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes low-, medium-, and high-carbon ferrochromium and ferrochromium silicon.

[3]Includes chromium metal waste and scrap and unwrought powders.

Source: U.S. Census Bureau.

TABLE 5

U.S. IMPORTS FOR CONSUMPTION OF CHROMITE ORE, FERROCHROMIUM, AND CHROMIUM METAL[1]

(Metric tons)

	2004	2005		
	January-December[2]	January	February	January-February
Chromite ore:				
More than 40% but less than 46% chromic oxide:				
Gross weight	1,690	--	147	147
Chromic oxide content	761	--	67	67
46% or more chromic oxide:				
Gross weight	151,000	9,660	25,200	34,800
Chromic oxide content	71,600	4,560	11,600	16,100
Total, all grades:				
Gross weight	153,000	9,660	25,300	35,000
Chromic oxide content	72,400	4,560	11,600	16,200
Ferrochromium:				
Low-carbon:[3]				
Not more than 0.5%:				
Gross weight	31,400	3,100	4,650	7,750
Chromium content	21,100	2,220	3,140	5,350
More than 0.5% but not more than 3%:				
Gross weight	5,720	1,710	576	2,280
Chromium content	3,830	1,060	370	1,430
Total, low-carbon:				
Gross weight	37,100	4,810	5,230	10,000
Chromium content	24,900	3,280	3,510	6,780
Medium-carbon:[4]				
Gross weight	48	--	18	18
Chromium content	NA	--	NA	NA
High-carbon:[5]				
Gross weight	398,000	56,800	39,900	96,700
Chromium content	223,000	32,400	25,300	57,700
Total, all grades:				
Gross weight	435,000	61,600	45,200	107,000
Chromium content	248,000	35,700	28,800	64,500
Chromium metal:				
Unwrought powders	1,350	67	27	94
Waste and scrap	61	--	3	3
Other than waste and scrap and unwrought powders	8,200	1,130	968	2,100
Total, all grades	9,610	1,200	998	2,200

NA Not available. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]May include revised data.

[3]Ferrochromium containing not more than 3% carbon.

[4]Ferrochromium containing more than 3% carbon but not more than 4% carbon.

[5]Ferrrochromium containing more than 4% carbon.

Source: U.S. Census Bureau.

TABLE 6

U.S. IMPORTS FOR CONSUMPTION OF FERROCHROMIUM IN 2005, BY GRADE AND BY COUNTRY[1]

Grade and country	February			January-February[2]		
	Gross weight (metric tons)	Chromium content (metric tons)	Value[3] (thousands)	Gross weight (metric tons)	Chromium content (metric tons)	Value[3] (thousands)
High-carbon ferrochromium:[4]						
China	5	4	$7	5	4	$7
Kazakhstan	17,000	11,700	17,600	30,900	21,300	31,500
Russia	4,950	3,220	3,680	9,330	6,100	7,950
South Africa	10,700	6,020	6,910	43,000	22,200	27,200
Zimbabwe	7,350	4,340	5,590	13,500	8,050	10,600
Total	39,900	25,300	33,800	96,700	57,700	77,300
Medium-carbon ferrochromium[5], China	18	20	41	18	20	41
Low-carbon ferrochromium:[6]						
More than 0.5% but not more than 3% carbon:						
India	--	--	--	20	13	17
Kazakhstan	100	70	138	100	70	138
Russia	336	214	470	1,370	917	1,360
South Africa	140	86	196	790	433	877
Total	576	370	804	2,280	1,430	2,400
Not more than 0.5% carbon:						
China	4	3	11	4	3	11
France	--	--	--	4	4	8
Germany	180	128	286	678	478	1,220
Japan	160	112	426	300	210	789
Kazakhstan	700	479	1,070	1,320	899	1,920
Russia	3,400	2,310	4,000	5,240	3,650	6,480
South Africa	208	105	93	208	105	93
Total	4,650	3,140	5,890	7,750	5,350	10,500
All grades:						
China	28	26	58	28	26	58
France	--	--	--	4	4	8
Germany	180	128	286	678	478	1,220
India	--	--	--	20	13	17
Japan	160	112	426	300	210	789
Kazakhstan	17,800	12,200	18,800	32,300	22,300	33,600
Russia	8,690	5,740	8,150	15,900	10,700	15,800
South Africa	11,000	6,210	7,190	44,000	22,800	28,200
Zimbabwe	7,350	4,340	5,590	13,500	8,050	10,600
Total	45,200	28,800	40,500	107,000	64,500	90,200

NA Not available. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]May include revised data.

[3]Customs import value generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise into the United States.

[4]Ferrochromium containing more than 4% carbon.

[5]Ferrochromium containing more than 3% but not more than 4% carbon.

[6]Ferrochromium containing not more than 3% carbon.

Source: U.S. Census Bureau.

TABLE 7

U.S. IMPORTS FOR CONSUMPTION OF CHROMIUM METAL IN 2005, BY GRADE AND BY COUNTRY[1]

Grade and country	February		January-February[2]	
	Gross weight (metric tons)	Value[3] (thousands)	Gross weight (metric tons)	Value[3] (thousands)
Unwrought powders:				
China	(4)	$3	(4)	$3
France	1	43	1	43
Germany	(4)	9	(4)	9
Japan	5	273	52	966
Russia	20	105	40	183
United Kingdom	(4)	33	(4)	65
Total	27	465	94	1,270
Other than waste and scrap and unwrought powders:				
Australia	(4)	2	(4)	2
Austria	--	--	(4)	4
China	320	1,470	601	2,760
France	236	1,950	381	2,960
Germany	(4)	3	1	11
India	--	--	1	5
Japan	3	5	14	951
Russia	346	1,600	861	5,700
United Kingdom	62	415	243	1,550
Total	968	5,440	2,100	13,900
All grades:				
Australia	(4)	2	(4)	2
Austria	--	--	(4)	4
China	320	1,470	601	2,760
France	237	1,990	382	3,010
Germany	4	63	5	71
India	--	--	1	5
Japan	8	278	66	1,920
Russia	366	1,700	901	5,880
United Kingdom	62	448	244	1,620
Total	998	5,950	2,200	15,300

-- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]May include revised data.

[3]Customs import value generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise into the United States.

[4]Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 8

U.S. TRADE OF STAINLESS STEEL, BY PRODUCT, IN 2005[1]

Stainless steel product	February		January-February	
	Gross weight (metric tons)	Value[2] (thousands)	Gross weight (metric tons)	Value[2] (thousands)
Exports:				
Ingot	484	$2,610	1,160	$6,800
Flat-rolled (width > 600 mm)	13,900	36,700	23,900	65,700
Flat-rolled (width < 600 mm)	8,240	31,500	17,600	58,400
Bars and rods in irregular coils	573	1,510	907	2,480
Other bars and rods	2,300	12,300	4,680	24,100
Wire	391	2,920	973	6,930
Tubes, pipes, hollow profiles	2,730	15,500	5,440	29,500
Total	28,600	103,000	54,700	194,000
Stainless steel scrap	52,800	57,400	84,700	90,500
Grand total	81,400	160,000	139,000	284,000
Imports:				
Ingot	17,700	44,600	26,700	69,300
Flat-rolled (width > 600 mm)	30,600	82,200	64,300	170,000
Flat-rolled (width < 600 mm)	3,180	13,100	6,960	26,900
Bars and rods in irregular coils	3,200	8,810	7,850	21,400
Other bars and rods	7,840	32,700	15,900	63,000
Wire	3,250	12,900	6,570	26,600
Tubes, pipes, hollow profiles	8,340	42,600	16,800	84,800
Total	74,100	237,000	145,000	462,000
Stainless steel scrap	11,400	13,300	21,800	26,200
Grand total	85,500	250,000	167,000	488,000

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Export value is free alongside ship (f.a.s.). Import value is Customs import value, which generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise into the United States.

Source: U.S. Census Bureau.